

PATENT ABSTRACTS OF JAPAN

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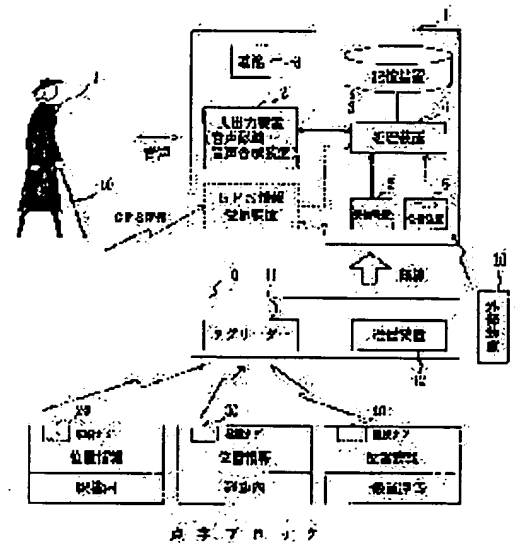
GOTO KOICHI

(54) LEADING AND GUIDING SYSTEM FOR VISION CHALLENGING PERSON

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a leading and guiding system for a vision challenging person capable of being easily used, providing sufficient information and safely and precisely leading and guiding the vision challenging person on a platform near a vehicle and in the station yard provided with passages, or the like.

SOLUTION: This leading and guiding system for the vision challenging person is provided with a portable terminal equipment 1 provided with a voice recognition means for recognizing voice, a processor 4 provided with a navigation function for searching a destination based on information from the voice recognition means, a reporting means for voice-synthesizing and reporting the destination searched from the processor 4, a receiver 5 for receiving tag information and a data receiver 6 for obtaining external guidance information from an external device 16, a guiding cane 10 for the vision challenging person provided with a tag reader 11 and a transmitter 12 and tags 20, 30 and 40 storing position information to be arranged at prescribed positions to the destination.



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CLAIMS

[Claim(s)]

[Claim 1] A speech recognition means to recognize (a) voice in the induction guidance system for visually impaired persons, The processor which has the navigation function to search the destination based on the information from this speech recognition means, An information means to synthesize voice from it and report the destination searched from this processor, The personal digital assistant equipment which has the receiving set which receives tag information, and the data sink which acquires the external guidance information from an external device, (b) Induction guidance system for visually impaired persons characterized by providing the guidance cane for visually impaired persons which has a tag reader and a sending set, and the tag which memorized the positional information arranged at a position until it reaches the (c) aforementioned destination.

[Claim 2] It is the induction guidance system for visually impaired persons which is formed in the signal with which said external device is installed in a zebra zone in the induction guidance system for visually impaired persons according to claim 1, and is characterized by providing a control unit, the signal display controlled by this control unit, and the sending set which transmits the information on this signal display.

[Claim 3] It is the induction guidance system for visually impaired persons characterized by providing the car house keeping equipment which said external device is installed in the home of a station etc. in the induction guidance system for visually impaired persons according to claim 1, and is controlled by the control unit and this control unit, and the sending set which transmits the information on this car house keeping equipment.

[Claim 4] It is the induction guidance system for visually impaired persons characterized by laying said tag under the underground of a yard in the induction guidance system for visually impaired persons according to claim 1, memorizing positional information, and memorizing the information related with the home of a yard, the information on a path, the stop location of a train, etc., the information on a wicket, etc. to the storage of said personal digital assistant equipment.

[Claim 5] It is the induction guidance system for visually impaired persons characterized by arranging said tag in a train in the induction guidance system for visually impaired persons according to claim 1, memorizing positional information, and memorizing the information on a car, the information on a seat, the information on a facility in the car, etc. to the storage of said personal digital assistant equipment with a textured paving block.

[Claim 6] It is the induction guidance system for visually impaired persons characterized by laying said tag under the ordinary road etc. in the induction guidance system for visually impaired persons according to claim 1, memorizing positional information, and memorizing the information on a road, the information on intersectional, the information on a landmark, etc. to the storage of said personal digital assistant equipment.

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TECHNICAL FIELD

[Field of the Invention] This invention relates to the induction guidance system for visually impaired persons which can acquire positional information, external guidance information, etc.

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PRIOR ART

[Description of the Prior Art] As a present induction guidance system for visually impaired persons, the thing as shown below is proposed, for example.

(1) Offer the information terminal unit for blind persons convenient to carry for the text of arbitration real time to a blind person person that it can transmit (refer to JP,5-72974,A).

[0003] (2) Avoid the trouble of the destination or the search for the specified substance by making a visually impaired person carry a pocket transmitter-receiver, and guiding with voice induction information until it results from the 1st area to the 2nd area made into the purpose (refer to JP,5-257424,A).

(3) When it approaches into a predetermined range only by carrying the card with a built-in sending set for the visually impaired person using facilities, such as a public facility, to the voice induction guide apparatus installed near many facilities of a toilet etc., induction guidance information with the voice about the facility is acquired automatically (refer to JP,6-63070,A).

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EFFECT OF THE INVENTION

[Effect of the Invention] As mentioned above, according to this invention, the following effectiveness can be done so as explained to the detail.

(A) By the tag reader with which the tag and the cane for guidance were equipped, a visually impaired person can enjoy exact induction guidance by receiving the external guidance information from the external device corresponding to the location, acquiring exact positional information.

[0026] (B) With acquisition of tag positional information, the information about crossing of the zebra zone from the signal as an external device can be acquired, and, moreover, crossing of a trustworthy visually impaired person's zebra zone can be supported safely.

(C) With acquisition of tag positional information, entrainment to a visually impaired person's electric car can be ensured [safely and].

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, it was not [that information not necessarily sufficient / in the above-mentioned conventional advanced technology / in use not being easy for a visually impaired person is not acquired, etc. and] satisfactory technically. This invention aims at sufficient information being offered and offering insurance and the induction guidance system for visually impaired persons which can carry out induction guidance of the visually impaired person exactly while being able to use it simple in the yard which has the home where a car approaches, and a path in view of such a situation.

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MEANS

[Means for Solving the Problem] This invention is set to the induction guidance system for [1] visually impaired persons, in order to attain the above-mentioned purpose. A speech recognition means to recognize voice, and the processor which has the navigation function to search the destination based on the information from this speech recognition means, An information means to synthesize voice from it and report the destination searched from this processor, The personal digital assistant equipment which has the receiving set which receives tag information, and the data sink which acquires the external guidance information from an external device, The guidance cane for visually impaired persons which has a tag reader and a sending set, and the tag which memorized the positional information arranged at a position until it reaches said destination are provided.

[0006] [2] In the induction guidance system for visually impaired persons of the above-mentioned [1] publication, said external device is prepared in the signal installed in a zebra zone, and possesses a control unit, the signal display controlled by this control unit, and the sending set which transmits the information on this signal display.

[3] In the induction guidance system for visually impaired persons of the above-mentioned [1] publication, said external device is installed in the home of a station etc., and possesses a control unit, the car house keeping equipment controlled by this control unit, and the sending set which transmits the information on this car house keeping equipment.

[0007] [4] In the induction guidance system for visually impaired persons of the above-mentioned [1] publication, said tag is laid under the underground of a yard, memorize positional information, and memorize the information related with the home of a yard, the information on a path, the stop location of a train, etc., the information on a wicket, etc. to the storage of said personal digital assistant equipment.

[5] In the induction guidance system for visually impaired persons of the above-mentioned [1] publication, said tag is arranged in a train, memorizes positional information, and memorizes the information on a car, the information on a seat, the information on a facility in the car, etc. to the storage of said personal digital assistant equipment with a textured paving block.

[0008] [6] In the induction guidance system for visually impaired persons of the above-mentioned [1] publication, said tag is laid under the ordinary road etc., memorizes positional information, and memorizes the information on a road, the information on intersectional, the information on a landmark, etc. to the storage of said personal digital assistant equipment.

[0009]

[Embodiment of the Invention] Hereafter, it explains, referring to a drawing about the gestalt of operation of this invention. Drawing 1 is the whole induction guidance system mimetic diagram for visually impaired persons showing the example of this invention. As shown in this drawing, a visually impaired person carries the cane 10 for guidance in the hand while equipping a pocket etc. with personal digital assistant equipment 1.

[0010] That personal digital assistant equipment 1 has speech recognition and a voice synthesizer 2 as an I/O device, and this speech recognition and voice synthesizer 2 are connected to the processor 4. Moreover, storage 3 is connected to a processor 4 and information required for induction guidance to the destination is memorized by this storage 3. Then, the processor 4 has a navigation function based on the tag positional information and the information from a store 3 which are mentioned later.

[0011] Furthermore, the receiving set (receiver) 5 which receives the positional information from a tag, the data sink 6 which receives the external guidance information (data) from an external device 16, and the GPS (satellite navigation system) information receiving set 7 which can receive the GPS information used in complement are formed. Moreover, the cell 8 which supplies power is carried in each part. Moreover, as for the cane 10 for guidance, a tag reader 11 is equipped at the tip, and the tag reader 11 is connected to the sending set (transmitter) 12.

[0012] Moreover, GPS information can also be acquired to acquire GPS information. It is advantageous to migration in

the location which does not have a textured paving block by this, and use in the location where a tag is not embedded. On the other hand, in order to guide a visually impaired person, the tags (member in which IC chip with which positional information was memorized was mounted) 20, 30, and 40 laid under the facility similar to underground or it are arranged. For example, the tag 20 has only the positional information arranged at a yard. And the home of a yard, the information on a path, the information on a train, the information on a wicket, etc. are memorized to storage 3. Moreover, the tag 30 has only the positional information arranged in a train. And the information on a car, the information on a seat, the information on a facility in the car, etc. are memorized to the storage 3 of personal digital assistant equipment 1. Furthermore, a tag 40 is laid under the ordinary road etc. and has only positional information. And the information on a road, the information on intersectional, the information on a landmark, etc. are memorized to storage 3.

[0013] Drawing 2 is the block diagram of the personal digital assistant equipment of the induction guidance system for visually impaired persons in which the example of this invention is shown. In this drawing, the speech recognition and the voice synthesizer 2 as an I/O device are equipped with microphone 2A, 1st amplifying-circuit 2B, speech recognition circuit 2C, electronic speech circuit 2D, 2nd amplifying-circuit 2E, and loudspeaker (information equipment) 2F.

[0014] In storage 3, the home of ** yard, the information on a path, the information on a train, the information on a wicket, the information on the car in ** train, the information on a seat, the information on a facility in the car, the information on the road of ** ordinary road, the information on intersectional, the information on a landmark, etc. are memorized beforehand. Moreover, as external guidance information, yard announcement information etc. is receivable by wireless in the information and the yard of a signal in a zebra zone.

[0015] At the time of a general path canalization line, in complement, GPS information can be received and yard announcement information etc. can be received in a yard. Subsequently, actuation of the induction guidance system for visually impaired persons in which the example of this invention is shown is explained. For example, if a visually impaired person results before a zebra zone as shown in drawing 3, with the tag 51 laid underground there, it will read that the tag reader 11 of the cane 10 for guidance is also only about the positional information. Then, when this positional information and the status information of the signal display 63 with which the operating state of the signal display 63 of the corresponding signal 60 is transmitted from the sending set 64, for example, a signal, are blue the data sink 6 of personal digital assistant equipment 1 receives the data for crossing of the crossing road whose signal is blue -- ***** -- the data -- external guidance information -- carrying out -- voice ---izing -- from loudspeaker 2F of I/O device 2 of personal digital assistant equipment 1 -- " -- a signal is blue now. The external guidance information, ", is reported and a visually impaired person can cross a zebra zone in comfort.

[0016] In addition, although he is trying to memorize only positional information to a tag 51, it cannot be overemphasized here that the information on other can also be made to be able to memorize and fine external guidance information can be offered by collaboration with a signal 60. Hereafter, this flow of operation is explained with drawing 5. Drawing 5 R> 5 is the operation flow chart (the 1) of the induction guidance system for visually impaired persons in which the example of this invention is shown.

[0017] (1) Acquire tag positional information first (step S1).

(2) Confirm whether be a location in front of a zebra zone from the tag positional information (step S2).

(3) Next, in being a location in front of a zebra zone, by the electric wave from a signal 60, the data sink 6 of personal digital assistant equipment 1 receives the status information of the signal indicating equipment 63, voice-ization is performed, and voice reports from loudspeaker 2F of I/O device 2 of personal digital assistant equipment 1 (step S3).

[0018] (4) If it carries out, by information with the voice, a visually impaired person will check the condition of a signal 60, and will cross a zebra zone (step S4). Thus, moreover by constituting, a trustworthy visually impaired person's zebra zone is safely supportable also in the time of passing of a zebra zone with voice guidance. Moreover, although a receiving set (receiver) 5 receives tag positional information on radio from the sending set (transmitter) 12 installed in the cane 10 for guidance, it can also acquire GPS information through the GPS information receiving set 7 in complement.

[0019] Drawing 6 is drawing showing the induction guidance system use condition for visually impaired persons (the 1) which shows the example of this invention. This example explains induction guidance of entrainment on an electric car. As shown in drawing 6, a visually impaired person progresses tag positional information to reliance at the bus door 83 of an electric car 80. That is, if the positional information of the tag 71 laid underground is read by the tag reader 11 and it results in the bus door 83 of the electric car 80, as shown in drawing 7, the car condition of the car house keeping equipment 93 controlled by the control device 92 of an external device 90 is transmitted by wireless from the sending set 94 as data. the data is made into ability ready for receiving with the data sink 6 of personal digital assistant equipment 1, and it voice-izes with I/O device 2 of personal digital assistant equipment 1 by making the data into external guidance information, and is shown in drawing 6 from loudspeaker 2F as opposed to a visually impaired person -- as -- " -- the door of the electric car of the 3rd track is opened now. " -- induction guidance is carried out [voice].

[0020] Then, the location of a tag 71 to a visually impaired person can get on from the door 81 which is opening the electric car 80. Drawing 8 is drawing showing the induction guidance system use condition for visually impaired persons (the 2) which shows the example of this invention.

(1) Acquire tag positional information first (step S11).

[0021] (2) Confirm whether be the location of the bus door of an electric car from the tag positional information (step S12).

(3) next, the data of the status information of the car house keeping equipment of the external device transmitted when it is the location of the bus door of an electric car -- a visually impaired person -- the data sink of personal digital assistant equipment -- ability ready for receiving -- becoming -- I/O device 2 of personal digital assistant equipment 1 -- voice --- izing -- from loudspeaker 2F -- for example -- " -- the door of the electric car of the 3rd track is opened now. " -- induction guidance is carried out (step S13).

[0022] (4) If it carries out, by information with the voice, a visually impaired person will check the condition of an electric car, and will get on from the bus door of an electric car (step S14). Thus, by constituting, entrainment to a visually impaired person's electric car can be ensured [safely and] with acquisition of tag positional information. In addition, it can show where the location is or whether the equipment in a current location and its location and a facility can be used using positional information, and the external device in the location and the status information of a facility.

[0023] For example, guidance set by the failure situation of a destination or a visually impaired person can be performed by forming the equipment which memorizes individual humanity news. Moreover, by inputting the place to which he wants to go, the path to a destination can be searched for and the zebra zone which may pass along any location or it is going to cross based on this can carry out whether the zebra zone in front of the right and an eye may be crossed, and synthetic guidance.

[0024] In addition, this invention is not limited to the above-mentioned example, and based on the meaning of this invention, various deformation is possible for it and it does not eliminate these from the range of this invention.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the whole induction guidance system mimetic diagram for visually impaired persons showing the example of this invention.

[Drawing 2] It is the block diagram of the personal digital assistant equipment of the induction guidance system for visually impaired persons in which the example of this invention is shown.

[Drawing 3] It is the mimetic diagram showing the induction guidance system use condition for visually impaired persons (the 1) which shows the example of this invention.

[Drawing 4] It is the outline block diagram of the signal which transmits the external guidance information which shows the example of this invention.

[Drawing 5] It is the operation flow chart (the 1) of the induction guidance system for visually impaired persons in which the example of this invention is shown.

[Drawing 6] It is the mimetic diagram showing the induction guidance system use condition for visually impaired persons (the 2) which shows the example of this invention.

[Drawing 7] It is the outline block diagram of the car house keeping equipment which transmits the external guidance information which shows the example of this invention.

[Drawing 8] It is the flow chart (the 2) of the induction guidance system for visually impaired persons in which the example of this invention is shown.

[Description of Notations]

1 Personal Digital Assistant Equipment

2 I/O Device (Speech Recognition and Voice Synthesizer)

2A Microphone

2B The 1st amplifying circuit

2C Speech recognition circuit

2D Electronic speech circuit

2E The 2nd amplifying circuit

2F Loudspeaker

3 Storage

4 Processor

5 Receiving Set (Receiver)

6 Data Sink

7 GPS Information Receiving Set

8 Cell

10 Cane for Guidance

11 Tag Reader

12, 64, 94 Sending set (transmitter)

16 90 External device

20, 30, 40, 51, 71 Tag

60 Signal

62 92 Control unit

63 Signal Display

80 Electric Car

81 Door

83 Bus Door

93 Car House Keeping Equipment

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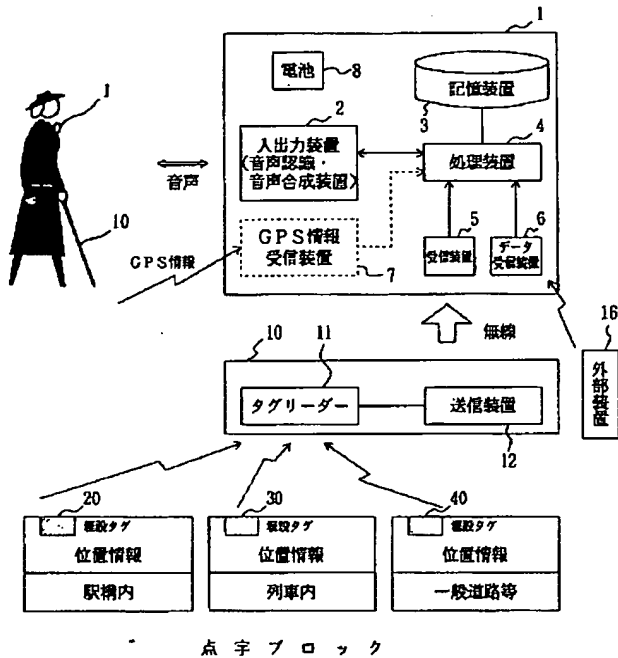
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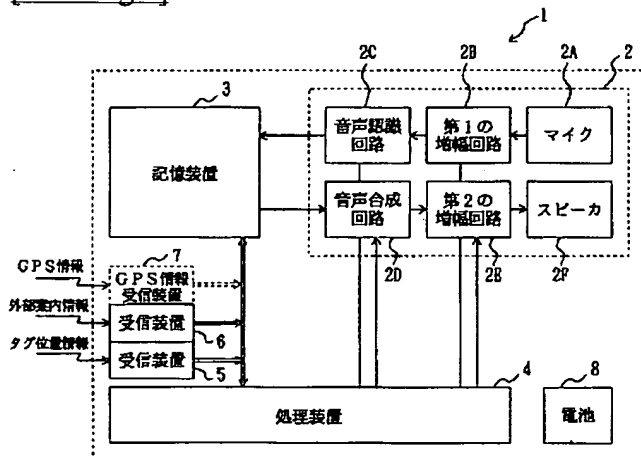
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DRAWINGS

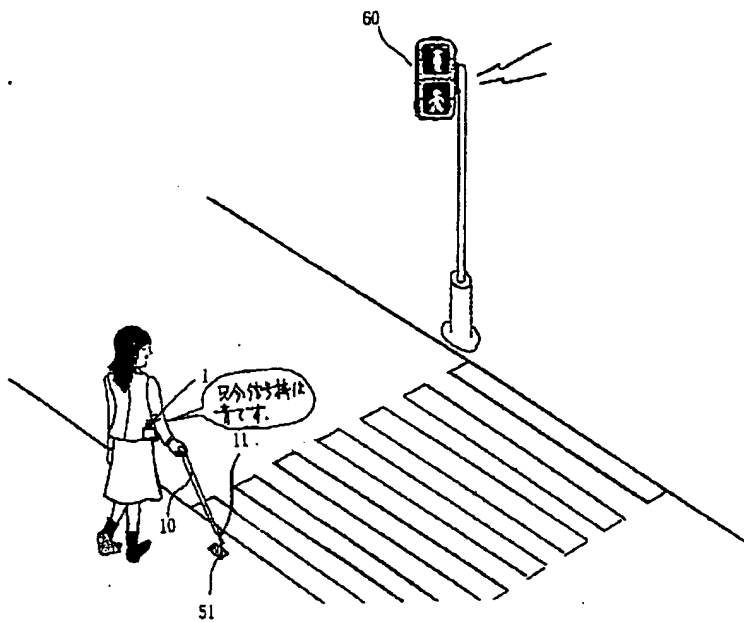
[Drawing 1]



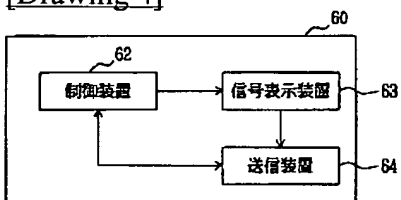
[Drawing 2]



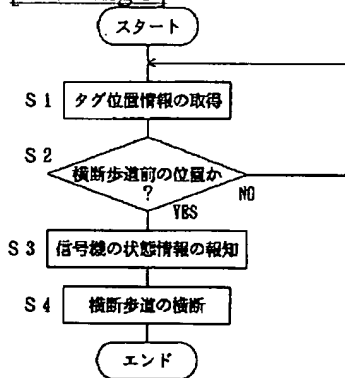
[Drawing 3]



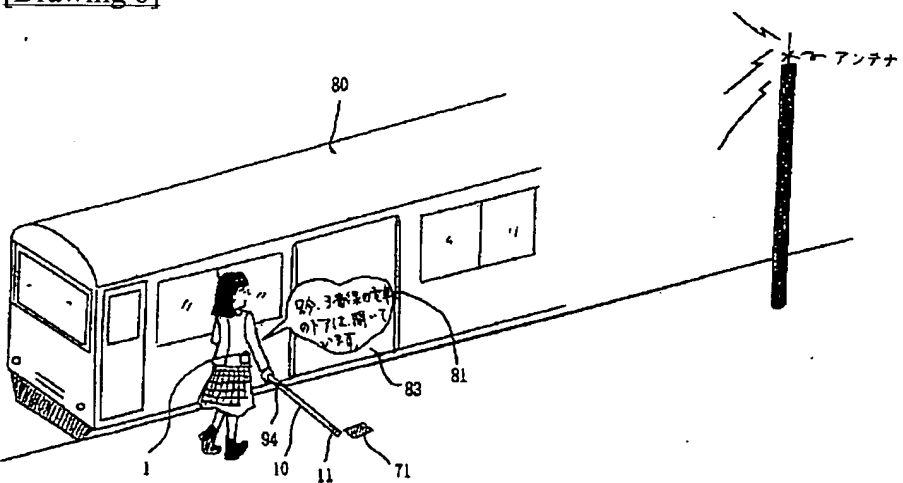
[Drawing 4]



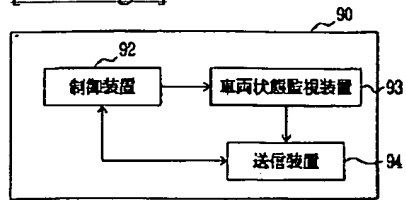
[Drawing 5]



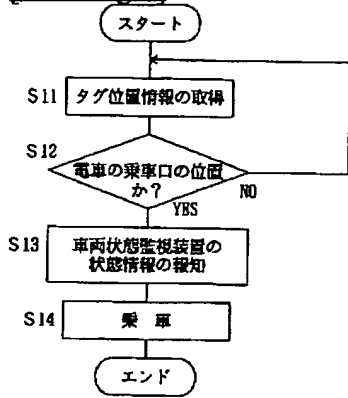
[Drawing 6]



[Drawing 7]



[Drawing 8]



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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the induction guidance system for visually impaired persons which can acquire positional information, external guidance information, etc.

[0002]

[Description of the Prior Art] As a present induction guidance system for visually impaired persons, the thing as shown below is proposed, for example.

(1) Offer the information terminal unit for blind persons convenient to carry for the text of arbitration real time to a blind person person that it can transmit (refer to JP,5-72974,A).

[0003] (2) Avoid the trouble of the destination or the search for the specified substance by making a visually impaired person carry a pocket transmitter-receiver, and guiding with voice induction information until it results from the 1st area to the 2nd area made into the purpose (refer to JP,5-257424,A).

(3) When it approaches into a predetermined range only by carrying the card with a built-in sending set for the visually impaired person using facilities, such as a public facility, to the voice induction guide apparatus installed near many facilities of a toilet etc., induction guidance information with the voice about the facility is acquired automatically (refer to JP,6-63070,A).

[0004]

[Problem(s) to be Solved by the Invention] However, it was not [that information not necessarily sufficient / in the above-mentioned conventional advanced technology / in use not being easy for a visually impaired person is not acquired, etc. and] satisfactory technically. This invention aims at sufficient information being offered and offering insurance and the induction guidance system for visually impaired persons which can carry out induction guidance of the visually impaired person exactly while being able to use it simple in the yard which has the home where a car approaches, and a path in view of such a situation.

[0005]

[Means for Solving the Problem] This invention is set to the induction guidance system for [1] visually impaired persons, in order to attain the above-mentioned purpose. A speech recognition means to recognize voice, and the processor which has the navigation function to search the destination based on the information from this speech recognition means, An information means to synthesize voice from it and report the destination searched from this processor, The personal digital assistant equipment which has the receiving set which receives tag information, and the data sink which acquires the external guidance information from an external device, The guidance cane for visually impaired persons which has a tag reader and a sending set, and the tag which memorized the positional information arranged at a position until it reaches said destination are provided.

[0006] [2] In the induction guidance system for visually impaired persons of the above-mentioned [1] publication, said external device is prepared in the signal installed in a zebra zone, and possesses a control unit, the signal display controlled by this control unit, and the sending set which transmits the information on this signal display.

[3] In the induction guidance system for visually impaired persons of the above-mentioned [1] publication, said external device is installed in the home of a station etc., and possesses a control unit, the car house keeping equipment controlled by this control unit, and the sending set which transmits the information on this car house keeping equipment.

[0007] [4] In the induction guidance system for visually impaired persons of the above-mentioned [1] publication, said tag is laid under the underground of a yard, memorize positional information, and memorize the information related with the home of a yard, the information on a path, the stop location of a train, etc., the information on a wicket, etc. to the storage of said personal digital assistant equipment.

[5] In the induction guidance system for visually impaired persons of the above-mentioned [1] publication, said tag is arranged in a train, memorizes positional information, and memorizes the information on a car, the information on a seat, the information on a facility in the car, etc. to the storage of said personal digital assistant equipment with a textured paving block.

[0008] [6] In the induction guidance system for visually impaired persons of the above-mentioned [1] publication, said tag is laid under the ordinary road etc., memorizes positional information, and memorizes the information on a road, the information on intersectional, the information on a landmark, etc. to the storage of said personal digital assistant equipment.

[0009]

[Embodiment of the Invention] Hereafter, it explains, referring to a drawing about the gestalt of operation of this invention. Drawing 1 is the whole induction guidance system mimetic diagram for visually impaired persons showing the example of this invention. As shown in this drawing, a visually impaired person carries the cane 10 for guidance in the hand while equipping a pocket etc. with personal digital assistant equipment 1.

[0010] That personal digital assistant equipment 1 has speech recognition and a voice synthesizer 2 as an I/O device, and this speech recognition and voice synthesizer 2 are connected to the processor 4. Moreover, storage 3 is connected to a processor 4 and information required for induction guidance to the destination is memorized by this storage 3. Then, the processor 4 has a navigation function based on the tag positional information and the information from a store 3 which are mentioned later.

[0011] Furthermore, the receiving set (receiver) 5 which receives the positional information from a tag, the data sink 6 which receives the external guidance information (data) from an external device 16, and the GPS (satellite navigation system) information receiving set 7 which can receive the GPS information used in complement are formed. Moreover, the cell 8 which supplies power is carried in each part. Moreover, as for the cane 10 for guidance, a tag reader 11 is equipped at the tip, and the tag reader 11 is connected to the sending set (transmitter) 12.

[0012] Moreover, GPS information can also be acquired to acquire GPS information. It is advantageous to migration in the location which does not have a textured paving block by this, and use in the location where a tag is not embedded. On the other hand, in order to guide a visually impaired person, the tags (member in which IC chip with which positional information was memorized was mounted) 20, 30, and 40 laid under the facility similar to underground or it are arranged. For example, the tag 20 has only the positional information arranged at a yard. And the home of a yard, the information on a path, the information on a train, the information on a wicket, etc. are memorized to storage 3. Moreover, the tag 30 has only the positional information arranged in a train. And the information on a car, the information on a seat, the information on a facility in the car, etc. are memorized to the storage 3 of personal digital assistant equipment 1. Furthermore, a tag 40 is laid under the ordinary road etc. and has only positional information. And the information on a road, the information on intersectional, the information on a landmark, etc. are memorized to storage 3.

[0013] Drawing 2 is the block diagram of the personal digital assistant equipment of the induction guidance system for visually impaired persons in which the example of this invention is shown. In this drawing, the speech recognition and the voice synthesizer 2 as an I/O device are equipped with microphone 2A, 1st amplifying-circuit 2B, speech recognition circuit 2C, electronic speech circuit 2D, 2nd amplifying-circuit 2E, and loudspeaker (information equipment) 2F.

[0014] In storage 3, the home of ** yard, the information on a path, the information on a train, the information on a wicket, the information on the car in ** train, the information on a seat, the information on a facility in the car, the information on the road of ** ordinary road, the information on intersectional, the information on a landmark, etc. are memorized beforehand. Moreover, as external guidance information, yard announcement information etc. is receivable by wireless in the information and the yard of a signal in a zebra zone.

[0015] At the time of a general path canalization line, in complement, GPS information can be received and yard announcement information etc. can be received in a yard. Subsequently, actuation of the induction guidance system for visually impaired persons in which the example of this invention is shown is explained. For example, if a visually impaired person results before a zebra zone as shown in drawing 3, with the tag 51 laid underground there, it will read that the tag reader 11 of the cane 10 for guidance is also only about the positional information. Then, when this positional information and the status information of the signal display 63 with which the operating state of the signal display 63 of the corresponding signal 60 is transmitted from the sending set 64, for example, a signal, are blue the data sink 6 of personal digital assistant equipment 1 receives the data for crossing of the crossing road whose signal is blue -- ***** -- the data -- external guidance information -- carrying out -- voice ---izing -- from loudspeaker 2F of I/O device 2 of personal digital assistant equipment 1 -- " -- a signal is blue now. The external guidance information, ", is reported and a visually impaired person can cross a zebra zone in comfort.

[0016] In addition, although he is trying to memorize only positional information to a tag 51, it cannot be

overemphasized here that the information on other can also be made to be able to memorize and fine external guidance information can be offered by collaboration with a signal 60. Hereafter, this flow of operation is explained with drawing 5. Drawing 5 R> 5 is the operation flow chart (the 1) of the induction guidance system for visually impaired persons in which the example of this invention is shown.

[0017] (1) Acquire tag positional information first (step S1).

(2) Confirm whether be a location in front of a zebra zone from the tag positional information (step S2).

(3) Next, in being a location in front of a zebra zone, by the electric wave from a signal 60, the data sink 6 of personal digital assistant equipment 1 receives the status information of the signal indicating equipment 63, voice-ization is performed, and voice reports from loudspeaker 2F of I/O device 2 of personal digital assistant equipment 1 (step S3).

[0018] (4) If it carries out, by information with the voice, a visually impaired person will check the condition of a signal 60, and will cross a zebra zone (step S4). Thus, moreover by constituting, a trustworthy visually impaired person's zebra zone is safely supportable also in the time of passing of a zebra zone with voice guidance. Moreover, although a receiving set (receiver) 5 receives tag positional information on radio from the sending set (transmitter) 12 installed in the cane 10 for guidance, it can also acquire GPS information through the GPS information receiving set 7 in complement.

[0019] Drawing 6 is drawing showing the induction guidance system use condition for visually impaired persons (the 1) which shows the example of this invention. This example explains induction guidance of entrainment on an electric car.

As shown in drawing 6, a visually impaired person progresses tag positional information to reliance at the bus door 83 of an electric car 80. That is, if the positional information of the tag 71 laid underground is read by the tag reader 11 and it results in the bus door 83 of the electric car 80, as shown in drawing 7, the car condition of the car house keeping equipment 93 controlled by the control device 92 of an external device 90 is transmitted by wireless from the sending set 94 as data. the data is made into ability ready for receiving with the data sink 6 of personal digital assistant equipment 1, and it voice-izes with I/O device 2 of personal digital assistant equipment 1 by making the data into external guidance information, and is shown in drawing 6 from loudspeaker 2F as opposed to a visually impaired person -- as -- " -- the door of the electric car of the 3rd track is opened now. " -- induction guidance is carried out [voice].

[0020] Then, the location of a tag 71 to a visually impaired person can get on from the door 81 which is opening the electric car 80. Drawing 8 is drawing showing the induction guidance system use condition for visually impaired persons (the 2) which shows the example of this invention.

(1) Acquire tag positional information first (step S11).

[0021] (2) Confirm whether be the location of the bus door of an electric car from the tag positional information (step S12).

(3) next, the data of the status information of the car house keeping equipment of the external device transmitted when it is the location of the bus door of an electric car -- a visually impaired person -- the data sink of personal digital assistant equipment -- ability ready for receiving -- becoming -- I/O device 2 of personal digital assistant equipment 1 -- voice --- izing -- from loudspeaker 2F -- for example -- " -- the door of the electric car of the 3rd track is opened now. " -- induction guidance is carried out (step S13).

[0022] (4) If it carries out, by information with the voice, a visually impaired person will check the condition of an electric car, and will get on from the bus door of an electric car (step S14). Thus, by constituting, entrainment to a visually impaired person's electric car can be ensured [safely and] with acquisition of tag positional information. In addition, it can show where the location is or whether the equipment in a current location and its location and a facility can be used using positional information, and the external device in the location and the status information of a facility.

[0023] For example, guidance set by the failure situation of a destination or a visually impaired person can be performed by forming the equipment which memorizes individual humanity news. Moreover, by inputting the place to which he wants to go, the path to a destination can be searched for and the zebra zone which may pass along any location or it is going to cross based on this can carry out whether the zebra zone in front of the right and an eye may be crossed, and synthetic guidance.

[0024] In addition, this invention is not limited to the above-mentioned example, and based on the meaning of this invention, various deformation is possible for it and it does not eliminate these from the range of this invention.

[0025]

[Effect of the Invention] As mentioned above, according to this invention, the following effectiveness can be done so as explained to the detail.

(A) By the tag reader with which the tag and the cane for guidance were equipped, a visually impaired person can enjoy exact induction guidance by receiving the external guidance information from the external device corresponding to the location, acquiring exact positional information.

[0026] (B) With acquisition of tag positional information, the information about crossing of the zebra zone from the

signal as an external device can be acquired, and, moreover, crossing of a trustworthy visually impaired person's zebra zone can be supported safely.

(C) With acquisition of tag positional information, entrainment to a visually impaired person's electric car can be ensured [safely and].

[Translation done.]

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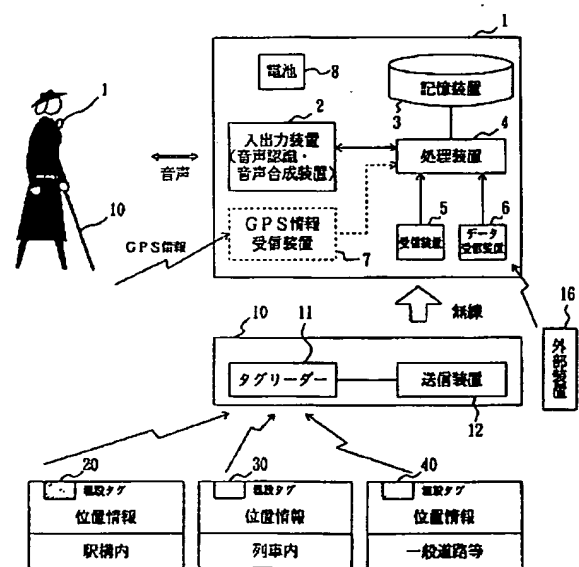
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(54)【発明の名称】 視覚障害者用誘導案内システム

(57)【要約】

【課題】 車両が近接するホームや通路を有する駅構内等において、簡便に使用することができるとともに、十分な情報を提供し、安全、かつ的確に視覚障害者を誘導案内することができる視覚障害者用誘導案内システムを提供する。

【解決手段】 視覚障害者用誘導案内システムにおいて、音声を認識する音声認識手段と、この音声認識手段からの情報に基づいて目的地を探索するナビゲーション機能を有する処理装置4と、この処理装置4から探索された目的地を音声合成して報知する報知手段と、タグ情報を受信する受信装置5と、外部装置16からの外部案内情報を取得するデータ受信装置6とを有する携帯端末装置1と、タグリーダー11と送信装置12とを有する視覚障害者用案内杖10と、前記目的地に至るまでの所定の位置に配置される位置情報を記憶したタグ20、30、40とを具備する。



点字ブロック

【特許請求の範囲】

【請求項1】 視覚障害者用誘導案内システムにおいて、(a) 音声を認識する音声認識手段と、該音声認識手段からの情報に基づいて目的地を探索するナビゲーション機能を有する処理装置と、該処理装置から探索された目的地を音声合成して報知する報知手段と、タグ情報を受信する受信装置と、外部装置からの外部案内情報を取得するデータ受信装置とを有する携帯端末装置と、

(b) タグリーダと送信装置とを有する視覚障害者用案内杖と、(c) 前記目的地に至るまでの所定の位置に配置される位置情報を記憶したタグとを具備することを特徴とする視覚障害者用誘導案内システム。

【請求項2】 請求項1記載の視覚障害者用誘導案内システムにおいて、前記外部装置は、横断歩道に設置される信号機に設けられ、制御装置、該制御装置によって制御される信号表示装置、該信号表示装置の情報を送信する送信装置とを具備することを特徴とする視覚障害者用誘導案内システム。

【請求項3】 請求項1記載の視覚障害者用誘導案内システムにおいて、前記外部装置は、駅のホーム等に設置され、制御装置、該制御装置によって制御される車両状態監視装置と、該車両状態監視装置の情報を送信する送信装置とを具備することを特徴とする視覚障害者用誘導案内システム。

【請求項4】 請求項1記載の視覚障害者用誘導案内システムにおいて、前記タグは駅構内の地中に埋設されて位置情報を記憶し、駅構内のホームや通路の情報、列車の停車位置等に関連付けられる情報、改札口の情報などを前記携帯端末装置の記憶装置に記憶することを特徴とする視覚障害者用誘導案内システム。

【請求項5】 請求項1記載の視覚障害者用誘導案内システムにおいて、前記タグは列車内に配置されて位置情報を記憶し、点字ブロックとともに、車両の情報、座席の情報、車内設備の情報などを前記携帯端末装置の記憶装置に記憶することを特徴とする視覚障害者用誘導案内システム。

【請求項6】 請求項1記載の視覚障害者用誘導案内システムにおいて、前記タグは一般道路などに埋設されて位置情報を記憶し、道路の情報や、交差点の情報やランドマークの情報などを前記携帯端末装置の記憶装置に記憶することを特徴とする視覚障害者用誘導案内システム。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、位置情報と外部案内情報等とを取得可能な視覚障害者用誘導案内システムに関するものである。

【0002】

【従来の技術】現状の視覚障害者用誘導案内システムとしては、例えば、以下に示すようなものが提案されてい

る。

(1) 盲人者に対して任意の文字情報を即時的に伝達可能な、また、携帯に便利な盲人用情報端末装置を提供する(特開平5-72974号参照)。

【0003】(2) 携帯送受信機を視覚障害者に携帯させ、第1のエリアから目的とする第2のエリアへ至るまでの誘導情報を音声で案内することにより、目的地または目的物捜しの労を回避する(特開平5-257424号参照)。

(3) 公共施設等の施設を利用する視覚障害者にとって、送信装置内蔵のカードを携帯しているだけで、トイレ等の諸設備の近傍に設置した音声誘導案内装置に対し所定の距離範囲内に近付いた時点で、その設備についての音声による誘導案内情報が自動的に得られるようにする(特開平6-63070号参照)。

【0004】

【発明が解決しようとする課題】しかしながら、上記した従来の先行技術では、視覚障害者にとって必ずしも、使用が容易でなかったり、十分な情報が得られないなど、技術的に満足のいくものではなかった。本発明は、このような状況に鑑みて、車両が近接するホームや通路を有する駅構内等において、簡便に使用することができるとともに、十分な情報が提供され、安全、かつ的確に視覚障害者を誘導案内することができる視覚障害者用誘導案内システムを提供することを目的とする。

【0005】

【課題を解決するための手段】本発明は、上記目的を達成するために、

(1) 視覚障害者用誘導案内システムにおいて、音声を認識する音声認識手段と、この音声認識手段からの情報に基づいて目的地を探索するナビゲーション機能を有する処理装置と、この処理装置から探索された目的地を音声合成して報知する報知手段と、タグ情報を受信する受信装置と、外部装置からの外部案内情報を取得するデータ受信装置とを有する携帯端末装置と、タグリーダと送信装置とを有する視覚障害者用案内杖と、前記目的地に至るまでの所定の位置に配置される位置情報を記憶したタグとを具備するようにしたものである。

【0006】(2) 上記(1)記載の視覚障害者用誘導案内システムにおいて、前記外部装置は、横断歩道に設置される信号機に設けられ、制御装置、この制御装置によって制御される信号表示装置、この信号表示装置の情報を送信する送信装置とを具備するようにしたものである。

(3) 上記(1)記載の視覚障害者用誘導案内システムにおいて、前記外部装置は、駅のホーム等に設置され、制御装置、この制御装置によって制御される車両状態監視装置と、この車両状態監視装置の情報を送信する送信装置とを具備するようにしたものである。

【0007】(4) 上記(1)記載の視覚障害者用誘導

案内システムにおいて、前記タグは駅構内の地中に埋設されて位置情報を記憶し、駅構内のホームや通路の情報、列車の停車位置等に関連付けられる情報、改札口の情報などを前記携帯端末装置の記憶装置に記憶するようにしたものである。

〔5〕上記〔1〕記載の視覚障害者用誘導案内システムにおいて、前記タグは列車内に配置されて位置情報を記憶し、点字ブロックとともに、車両の情報、座席の情報、車内設備の情報などを前記携帯端末装置の記憶装置に記憶するようにしたものである。

【0008】〔6〕上記〔1〕記載の視覚障害者用誘導案内システムにおいて、前記タグは一般道路などに埋設されて位置情報を記憶し、道路の情報や、交差点の情報やランドマークの情報などを前記携帯端末装置の記憶装置に記憶するようにしたものである。

【0009】

【発明の実施の形態】以下、本発明の実施の形態について図面を参照しながら説明する。図1は本発明の実施例を示す視覚障害者用誘導案内システムの全体模式図である。この図に示すように、視覚障害者は、ポケット等に携帯端末装置1を装着するとともに、手には案内用杖10を携えている。

【0010】その携帯端末装置1は、入出力装置として音声認識・音声合成装置2を有し、この音声認識・音声合成装置2は処理装置4に接続されている。また、処理装置4には、記憶装置3が接続され、この記憶装置3には目的地への誘導案内に必要な情報が記憶されている。そこで、処理装置4は、後述するタグ位置情報と記憶装置3からの情報に基づいたナビゲーション機能を持っている。

【0011】更に、タグからの位置情報を受信する受信装置（受信機）5と、外部装置16からの外部案内情報（データ）を受信するデータ受信装置6と、補完的に使用するGPS情報を受信可能なGPS（衛星航法システム）情報受信装置7が設けられている。また、各部に電力を供給する電池8が搭載されている。また、案内用杖10はその先端にタグリーダー11が装備され、そのタグリーダー11は送信装置（送信機）12に接続されている。

【0012】また、GPS情報を取得したい場合には、GPS情報を取得することもできる。これにより、点字ブロックのない場所での移動や、タグの埋め込まれていない場所での利用に有利である。一方、視覚障害者を案内するために、地中やそれに類する施設に埋設されるタグ（位置情報が記憶されたICチップが実装された部材）20、30、40が配置される。例えば、タグ20は駅構内に配置される、位置情報のみを有している。そして、記憶装置3に、駅構内のホームや通路の情報、列車の情報、改札口の情報などを記憶している。また、タグ30は列車内に配置される、位置情報のみを有してい

る。そして、携帯端末装置1の記憶装置3に、車両の情報、座席の情報、車内設備の情報などを記憶している。更に、タグ40は一般道路などに埋設され、位置情報のみを有している。そして、記憶装置3に、道路の情報や交差点の情報や、ランドマークの情報などを記憶している。

【0013】図2は本発明の実施例を示す視覚障害者用誘導案内システムの携帯端末装置のブロック図である。この図において、入出力装置としての音声認識・音声合成装置2はマイク2Aと、第1の増幅回路2Bと、音声認識回路2Cと、音声合成回路2Dと、第2の増幅回路2Eとスピーカ（報知装置）2Fとを備えている。

【0014】記憶装置3には、①駅構内のホームや通路の情報、列車の情報、改札口の情報、②列車内の車両の情報、座席の情報、車内設備の情報、③一般道路の道路の情報、交差点の情報、ランドマークの情報などを予め記憶している。また、外部案内情報としては、横断歩道における信号機の情報や駅構内においては、構内アナウンス情報などを無線により受信することができる。

【0015】一般道路通行時には、補完的に、GPS情報を受信することができるし、駅構内においては、構内アナウンス情報などを受信することができる。次いで、本発明の実施例を示す視覚障害者用誘導案内システムの動作について説明する。例えば、図3に示すように、視覚障害者が横断歩道の手前に至ると、そこに埋設されたタグ51では、その位置情報のみを案内用杖10のタグリーダー11でもって読み出す。すると、この位置情報と対応した信号機60の信号表示装置63の動作状態が送信装置64から送信されている信号表示装置63の状態情報、例えば、信号機が青の場合は、信号機が青である横断道路の横断のためのデータを携帯端末装置1のデータ受信装置6で受信することになり、そのデータを外部案内情報として音声化して、携帯端末装置1の入出力装置2のスピーカ2Fから『只今、信号機は青です。』との外部案内情報が報知され、視覚障害者は横断歩道を安心して横断することができる。

【0016】なお、ここでは、タグ51には、位置情報のみを記憶するようにしているが、その他の情報をも記憶させて、信号機60との協働により、きめの細かい外部案内情報を提供することができることは言うまでもない。以下、この動作フローを図5とともに説明する。図5は本発明の実施例を示す視覚障害者用誘導案内システムの動作フローチャート（その1）である。

【0017】（1）まず、タグ位置情報の取得を行う（ステップS1）。

（2）そのタグ位置情報から横断歩道前の位置であるか否かをチェックする（ステップS2）。

（3）次に、横断歩道前の位置である場合には、信号機60からの電波により、信号表示装置63の状態情報を携帯端末装置1のデータ受信装置6で受信して、音声化

を行い、携帯端末装置1の入出力装置2のスピーカ2Fから音声により報知する(ステップS3)。

【0018】(4)すると、視覚障害者はその音声による報知により、信号機60の状態を確認して横断歩道を横断する(ステップS4)。このように構成することにより、横断歩道の通行時でも、音声案内により、安全に、しかも、確実な視覚障害者の横断歩道を支援することができる。また、受信装置(受信機)5は案内用杖10に設置された送信装置(送信機)12からタグ位置情報を無線で受信するが、補完的に、GPS情報をGPS

10 情報受信装置7を介して取得することもできる。
【0019】図6は本発明の実施例を示す視覚障害者用誘導案内システムの使用状態(その1)を示す図である。この実施例では、電車への乗車の誘導案内について説明する。図6に示すように、視覚障害者がタグ位置情報を頼りに、電車80の乗車口83に進む。つまり、埋設されたタグ71の位置情報をタグリーダー11で読み取り、その電車80の乗車口83に至ると、図7に示すように、外部装置90の制御装置92によって制御される車両状態監視装置93の車両状態がデータとして送信装置94から無線で送信されている。そのデータを携帯端末装置1のデータ受信装置6で受信可能にし、そのデータを外部案内情報として、携帯端末装置1の入出力装置2によって音声化してスピーカ2Fから、視覚障害者に対して、例えば、図6に示すように、『只今、3番線の電車のドアは開いています。』と音声により誘導案内する。

【0020】すると、タグ71の位置から、視覚障害者は、電車80の開いているドア81から乗車することができる。図8は本発明の実施例を示す視覚障害者用誘導案内システムの使用状態(その2)を示す図である。

(1)まず、タグ位置情報の取得を行う(ステップS11)。

【0021】(2)そのタグ位置情報から、電車の乗車口の位置であるか否かをチェックする(ステップS12)。

(3)次に、電車の乗車口の位置である場合には、送信されている外部装置の車両状態監視装置の状態情報のデータを、視覚障害者は、携帯端末装置のデータ受信装置で受信可能となり、携帯端末装置1の入出力装置2によって音声化してスピーカ2Fから、例えば、『只今、3番線の電車のドアは開いています。』と誘導案内される(ステップS13)。

【0022】(4)すると、視覚障害者はその音声による報知により、電車の状態を確認して電車の乗車口から乗車する(ステップS14)。このように構成することにより、タグ位置情報の取得とともに、視覚障害者の電車への乗車を安全、かつ、確実に行うことができる。なお、位置情報とその場所にある外部装置や設備の状態情報を利用して、その場所がどこであるか、現在の場所と

その場所にある装置や設備が使えかなどの案内を行うようにすることもできる。

【0023】例えば、個人情報記憶する装置を設けることにより、行き先や視覚障害者の障害状況に合わせた案内ができる。また、自分の行きたいところを入力しておくことにより、行き先までの経路を求め、これを元に、どの場所を通過してよいか、渡ろうとしている横断歩道は正しいか、目の前の横断歩道を渡ってもかまわないかなど、総合的な案内をすることができる。

10 【0024】なお、本発明は上記実施例に限定されるものではなく、本発明の趣旨に基づいて種々の変形が可能であり、これらを本発明の範囲から排除するものではない。

【0025】

【発明の効果】以上、詳細に説明したように、本発明によれば、以下のような効果を奏することができる。

(A) タグと案内用杖に装着されたタグリーダーにより、的確な位置情報を得ながら、その位置に対応した外部装置からの外部案内情報を受けることにより、視覚障害者は、的確な誘導案内を享受することができる。

20 【0026】(B) タグ位置情報の取得とともに、外部装置としての信号機からの横断歩道の横断に関する情報を取得することができ、安全に、しかも、確実な視覚障害者の横断歩道の横断を支援することができる。

(C) タグ位置情報の取得とともに、視覚障害者の電車への乗車を安全、かつ、確実に行うことができる。

【図面の簡単な説明】

【図1】本発明の実施例を示す視覚障害者用誘導案内システムの全体模式図である。

30 【図2】本発明の実施例を示す視覚障害者用誘導案内システムの携帯端末装置のブロック図である。

【図3】本発明の実施例を示す視覚障害者用誘導案内システムの使用状態(その1)を示す模式図である。

【図4】本発明の実施例を示す外部案内情報を送信する信号機の概略ブロック図である。

【図5】本発明の実施例を示す視覚障害者用誘導案内システムの動作フローチャート(その1)である。

【図6】本発明の実施例を示す視覚障害者用誘導案内システムの使用状態(その2)を示す模式図である。

40 【図7】本発明の実施例を示す外部案内情報を送信する車両状態監視装置の概略ブロック図である。

【図8】本発明の実施例を示す視覚障害者用誘導案内システムのフローチャート(その2)である。

【符号の説明】

1 携帯端末装置

2 入出力装置(音声認識・音声合成装置)

2A マイク

2B 第1の増幅回路

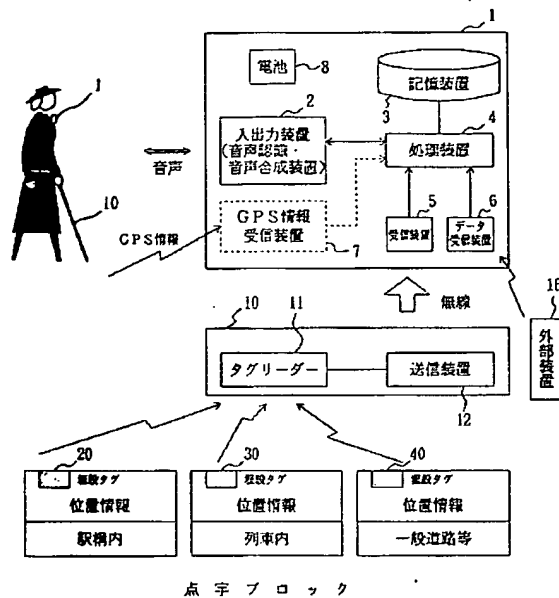
2C 音声認識回路

50 2D 音声合成回路

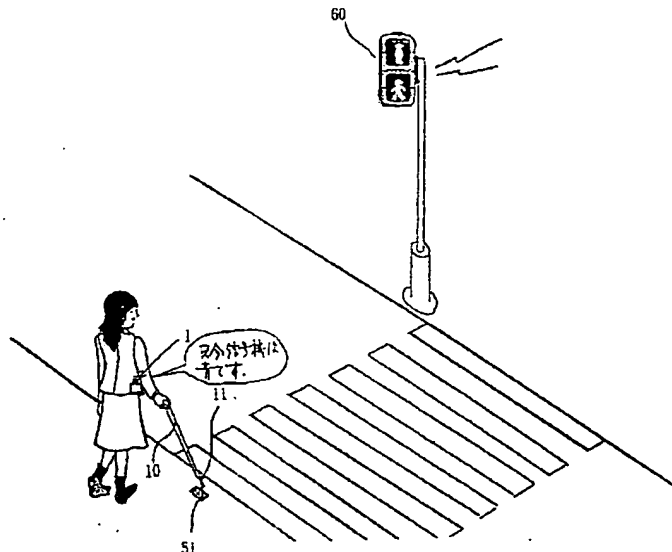
- 2E 第2の増幅回路
 2F スピーカ
 3 記憶装置
 4 処理装置
 5 受信装置(受信機)
 6 データ受信装置
 7 GPS情報受信装置
 8 電池
 10 案内用杖
 11 タグリーダー

- 12, 64, 94 送信装置(送信機)
 16, 90 外部装置
 20, 30, 40, 51, 71 タグ
 60 信号機
 62, 92 制御装置
 63 信号表示装置
 80 電車
 81 ドア
 83 乗車口
 10 93 車両状態監視装置

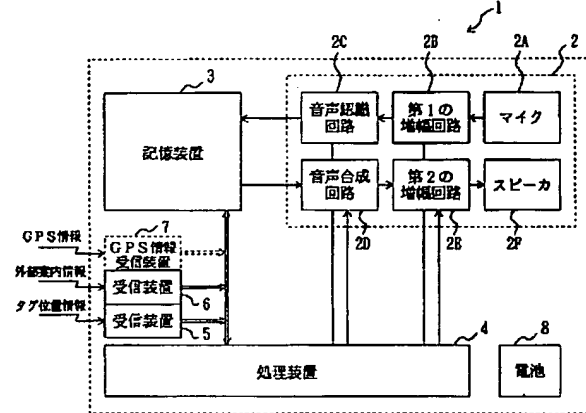
【図1】



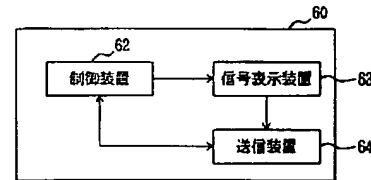
【図3】



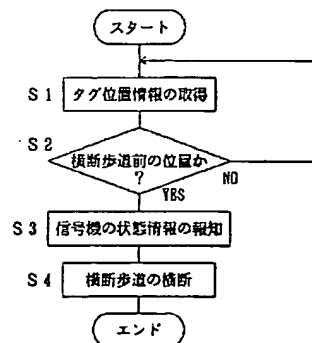
【図2】



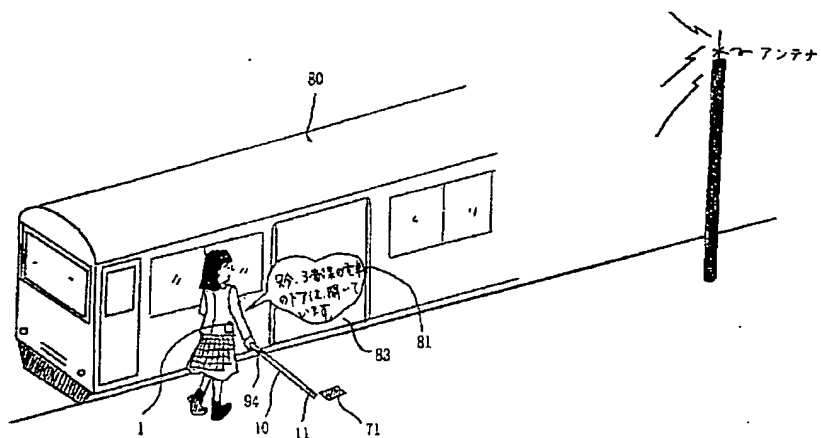
【図4】



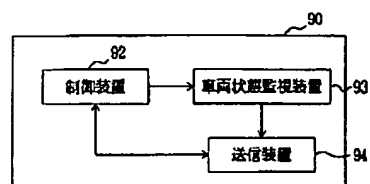
【図5】



【図6】



【図7】



【図8】

